

REMARKS/ARGUMENTS

Reexamination of the captioned application is respectfully requested.

A. SUMMARY OF THIS AMENDMENT

By the current amendment, Applicants basically:

1. Editorially amend the specification.
2. Amend independent claims 1 and 13.
3. Editorially amend claims 12 and 14-22.
4. Add new claims 23-34.
5. Respectfully traverse all prior art rejections.

B. PATENTABILITY OF THE CLAIMS

Claims 1-2 and 13 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 41 and 21-22 of U.S. Patent 7,106,709. Claims 1-5, 8, 11-14, 16-17 and 19-22 stand rejected under 35 USC 102(b) as being anticipated by U.S. Patent 5,228,062 to Bingham. Claims 1-22 stand rejected under 35 USC 102(e) as being anticipated by U.S. Publication 2002/0101840 to Davidsson et al. Claims 15 and 18 stand rejected under 35 USC 103(a) as being unpatentable over U.S. Patent 5,228,062 to Bingham as applied to claim 13 and in view of the John G. Proakis reference. All prior art rejections are respectfully traversed for at least the following reasons.

Independent claims 1 and 13 have been amended to include determination of optimal values of two filter coefficients, "a" and "b"¹. The amendatory language is described in the original description as filed from page 10, line 20 to page 12, line 20.

In the above regard, independent method claim 1 and independent apparatus claim 13 have been amended to include a ratio of the predicted phase offset ($\varphi_A[k]$) and the estimated phase offset of the first data signal ($\varphi_{est}[1]$). This ratio determines the filter coefficients "a" and "b", as now claimed in new dependent claims 23, 25, and 27. This ratio is substantially equal to the distance ratio X_{k+1} / Y_1 , the distance being measured in number of data signal samples.

The ratio equivalence is succinctly shown by Equation 10 on page 10 and Equation 14 on page 11. Further explanation can be found on page 7, lines 21 to 26; in particular, lines 23 to 25 indicate that $\varphi_A[k-1]$ is associated with the "beginning of the k-th data signal" (not the beginning of the k-1th data signal) – hence the expression "the data signal (S_{k+1}) that immediately follows that data signal (S_k)" in the amended claims.

The claimed subject matter and particularly the determining of the optimal values of a and b, e.g. Equations (9) and (15), are not disclosed by US Patent 7,106,709. At most, US 7,106,709 makes but superficial mention that the optimum coefficients for the phase-locked-loop can be determined by parameters X_K and Y_1 (see col. 12, lines 46 to

¹ The coefficients a and b characterize the noise suppression and the acquisition time of the phase-locked-loop filter. If their values satisfy Equations (9) and (15) as in the description, respectively, the phase-locked-loop can achieve efficient frequency tracking with a short acquisition time. Briefly, with respect to a certain data signal (k), the optimal values of a and b are obtained by dividing the distance between the beginning of a data signal (k+1) following the data signal (k) and a main phase reference point (R_{CE}) by the distance between the middle of the data signal (k) and the main reference point (R_{CE}), the distances measured in terms of number of data samples in the time domain.

48), but no specific techniques for calculating such coefficients are revealed by US Patent 7,106,709.

In terms of editorial amendment, the term “data signal samples” and the expression “at least one of the data signals comprising at least two data signal samples” have been inserted into the claims’ preamble portions. The data signal samples are disclosed on, e.g., page 4, lines 14 to 15 as well as original claim 4 which concerns the separation of one data signal into at least two data signal samples.

The original “correcting” act of method claim 1 has been moved to a new dependent claim 34. As amended, independent claim 1 has a simplified “correcting” act as its last paragraph.

Some new dependent apparatus claims (claims 23 to 34) have been added into the claim set. The subject-matter thereof is supported by the description and/or claims as originally filed, as listed:

- new claim 23: page 10, lines 20 – 24; page 10, Eq. 10 and the paragraph immediately there-above.
- new claim 24: page 11, Eq. 11.
- new claim 25: page 10, lines 20 – 24; page 11, Eq. 15.
- new claim 26: page 11, Eq. 15.
- new claim 27: page 10, lines 20 – 24; pages 10 – 11, Eqs. 11 and 15.
- new claim 28: pages 10 – 11, Eqs. 11 and 15.
- new claim 29: original method claim 12.
- new claim 30: original method claim 12.
- new claim 31: original method claim 10.
- new claim 32: original method claim 9.
- new claim 33: original method claim 10.
- new claim 34: original method claim 1.

C. MISCELLANEOUS

In view of the foregoing and other considerations, all claims are deemed in condition for allowance. A formal indication of allowability is earnestly solicited.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,
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